Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising:

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core; and

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate with an auxiliary pump if the temperature difference is greater than a first predetermined temperature difference.

2. (Original) The method of claim 1, wherein the temperature difference is determined by measuring the temperatures of the coolant entering the heater core and the air exiting the heater core.

3. (Original) The method of claim 1, wherein the temperature of the coolant at the first flow rate is determined by measuring the temperature of the coolant, and wherein the temperature of the air exiting the heater core is determined by estimating the temperature of the air exiting the heater core.

4. (Currently Amended) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising: ~~The method of claim 1, further comprising:~~

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core;

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the temperature difference is greater than a first predetermined temperature difference; and

after increasing the coolant flow rate from the first coolant flow rate, automatically estimating a temperature difference between the temperature of coolant before the coolant enters the heater core and temperature of air exiting the heater core as if the coolant was at a third flow rate lower than the second flow rate; and if the estimated temperature difference is less than a second predetermined temperature difference, reducing the flow rate of the coolant to about the third flow rate.

5. (Original) The method of claim 4, wherein the first predetermined temperature difference is greater than the second predetermined temperature difference.

6. (Original) The method of claim 5, wherein the first predetermined temperature difference is about 20°C.

7. (Original) The method of claim 4, wherein the first predetermined temperature difference is about $1/4^{th}$ greater than the second predetermined temperature difference.

8. (Original) The method of claim 4, further comprising: after reducing the flow rate of the coolant to about the third flow rate, automatically determining a second temperature difference between the temperature of the coolant before the coolant enters the heater core and a temperature of air exiting the heater core by measuring the temperatures of the coolant entering the heater core and the temperature of the air exiting the heater core; and automatically increasing the flow rate of the coolant if the second temperature difference is greater than the first predetermined temperature difference.

9. (Original) The method of claim 1, further comprising: decreasing the flow rate of the coolant from the second flow rate to a third flow rate lower than the second flow rate after the coolant flows at the second flow rate for a predetermined period of time.

10. (Currently Amended) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising: ~~The method of claim 9, further comprising:~~

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core;

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the temperature difference is greater than a first predetermined temperature difference;

decreasing the flow rate of the coolant from the second flow rate to a third flow rate lower than the second flow rate after the coolant flows at the second flow rate for a predetermined period of time; and

after decreasing the flow rate of the coolant from the second flow rate to the third flow rate, automatically determining a second temperature difference between the temperature of coolant before the coolant enters the [[a]] heater core and a temperature of air exiting the heater core; and automatically increasing the flow rate of the coolant if the second temperature difference is greater than the first predetermined temperature difference.

11. (Original) The method of claim 10, wherein the second temperature difference is determined by measuring the temperatures of the coolant entering the heater core and the air exiting the heater core.

12. (Original) A method for automatically controlling the climate in a cabin of an automobile, comprising: automatically adjusting the flow rate of engine coolant through a heater core according to claim 1; and providing heated air to the cabin from the heater core.

13. (Original) The method of claim 1, wherein the temperature of air exiting the heater core is estimated.

14. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on the percentage of the total conditioned air introduced into the cabin that passes through the heater core.

15. (Original) The method of claim 13, wherein the estimate for the temperature of air

exiting the heater core is based on a blower speed that blows conditioned air into the cabin.

16. (Original) The method of claim 14, wherein the estimate for the temperature of air exiting the heater core is based on the mass flow rate of air passing through the heater core.

17. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on empirical data previously obtained relating to at least one operational parameter of an automobile component affecting coolant flow rate.

18. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on the enthalpy per degree of coolant flowing through the heater core and the enthalpy per degree of air flowing through the heater core.

19. (Original) The method of claim 18, wherein the estimate for the temperature of air exiting the heater core is based on a predetermined ratio of the enthalpy per degree of coolant flowing through the heater core and the enthalpy per degree of air flowing through the heater core.

20. (Currently Amended) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising: ~~The method of claim 19,~~

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core;

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the temperature difference is greater than a first predetermined temperature difference; and

wherein the temperature of air exiting the heater core is estimated;

wherein the estimate for the temperature of air exiting the heater core is based on the enthalpy per degree of coolant flowing through the heater core and the enthalpy per degree of air flowing through the heater core;

wherein the estimate for the temperature of air exiting the heater core is based on a

predetermined ratio of the enthalpy per degree of coolant flowing through the heater core and the enthalpy per degree of air flowing through the heater core;

wherein the predetermined ratio used as a basis to estimate the temperature of air exiting the heater core varies with respect to at least one variable operational parameter of an automobile component affecting coolant flow rate.

21. (Currently Amended) The method of claim 20, further comprising automatically scaling the ratio based on a percentage of the total conditioned air introduced into the cabin that passes through ~~thorough~~ the heater core and a blower speed that blows conditioned air into the cabin.

22. (Currently Amended) The method of claim 20, wherein the ratio is further based on a percentage of the total conditioned air introduced into the cabin that passes through ~~thorough~~ the heater core and a blower speed that blows conditioned air into the cabin.

23. (Original) The method of claim 20, wherein the temperature estimate is further based on an effective overall heat transfer coefficient of the heater core.

24. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on a measured temperature of air entering the heater core.

25. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on a measured temperature of coolant entering the heater core

26. (Original) The method of claim 13, wherein the estimate for the temperature of air exiting the heater core is based on a heater core distribution factor.

27. (Currently Amended) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising:

automatically obtaining a value indicative of a mix door position;

automatically obtaining a value indicative of a flow rate of air through the heater core;

automatically obtaining a value indicative of coolant flow rate through the heater core;

automatically measuring the temperature of coolant before the coolant enters the heater core;

automatically measuring the temperature of air before the air passes through the heater core;

automatically determining a temperature of air exiting the heater core based on the automatically obtained ~~obtaining a~~ value indicative of the [[a]] mix door position, the automatically obtained ~~obtaining a~~ value indicative of the [[a]] flow rate of air through the heater core, the automatically obtained ~~obtaining a~~ value indicative of the coolant flow rate through the heater core, the automatically measured temperature of coolant, and the automatically measured temperature of air;

automatically determining a temperature difference between the automatically measured ~~determined~~ temperature of the coolant before the coolant enters the heater core and the automatically determined temperature of air exiting the heater core; and

automatically increasing the flow rate of the coolant if the temperature difference is greater than a predetermined temperature difference.

28. (Original) A method for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising:

utilizing an algorithm relating to at least the equation:

$$Tao = [(Tci - (Tci - Tai) \cdot e^{(-UA/Cc \cdot (1+Cc/Ch))}]/(1 + Cc/Ch) \qquad (1)$$

where,

Tao = a temperature of air exiting the heater core,

Tci = a temperature of coolant at the inlet of the heater core,

Tai = a temperature of air prior to entering the heater core,

Cc/Ch = a variable ratio of coolant enthalpy per degree and heater core enthalpy per degree, and

UA/Cc = a variable heater core performance parameter based on Cc/Ch;

automatically determining Tao of air passing through the heater core utilizing the algorithm;

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters the [[a]] heater core and Tao; and

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate if the temperature difference is greater than a predetermined temperature difference.

29. (Original) The method of claim 28, wherein the value of Cc/Ch used in the algorithm is determined at least based on a blower speed and a coolant flow rate.

30. (Original) The method of claim 29, wherein the value of Cc/Ch used in the algorithm is further based on a percentage of air introduced into the cabin that passes through the heater core.

Claims 31-51. (Canceled)

52. (Currently Amended) A program product for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, comprising machine-readable program code for causing, when executed, a machine to perform the following method actions:

automatically determining a temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core; and

automatically increasing the flow rate of the coolant to a second flow rate higher than the first flow rate with an auxiliary pump if the temperature difference is greater than a first predetermined temperature difference.

53. (Currently Amended) The program product of claim 52, further causing, when executed, a machine to perform the following method actions: after increasing the coolant flow rate from the first coolant flow rate, automatically estimating a temperature difference between the temperature of coolant before the coolant enters the [[a]] heater core and temperature of air exiting the heater core as if the coolant was at a third flow rate lower than the second flow rate; and if the estimated temperature difference is less than a second predetermined

temperature difference, reducing the flow rate of the coolant to about the third flow rate.

54. (Canceled)

55. (Canceled)